

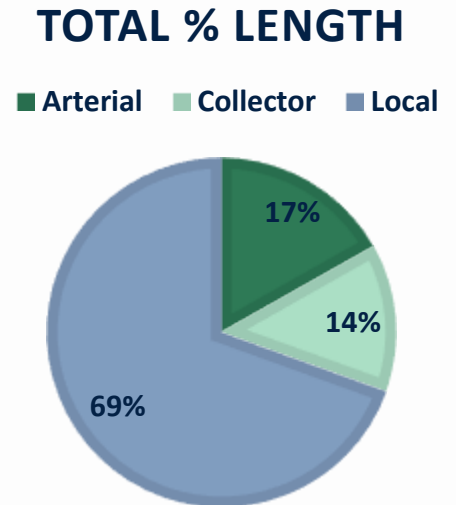


CITY OF NEW ORLEANS

City-Wide Pavement Condition Assessment Results
August 30, 2016

Background - The Roadway System

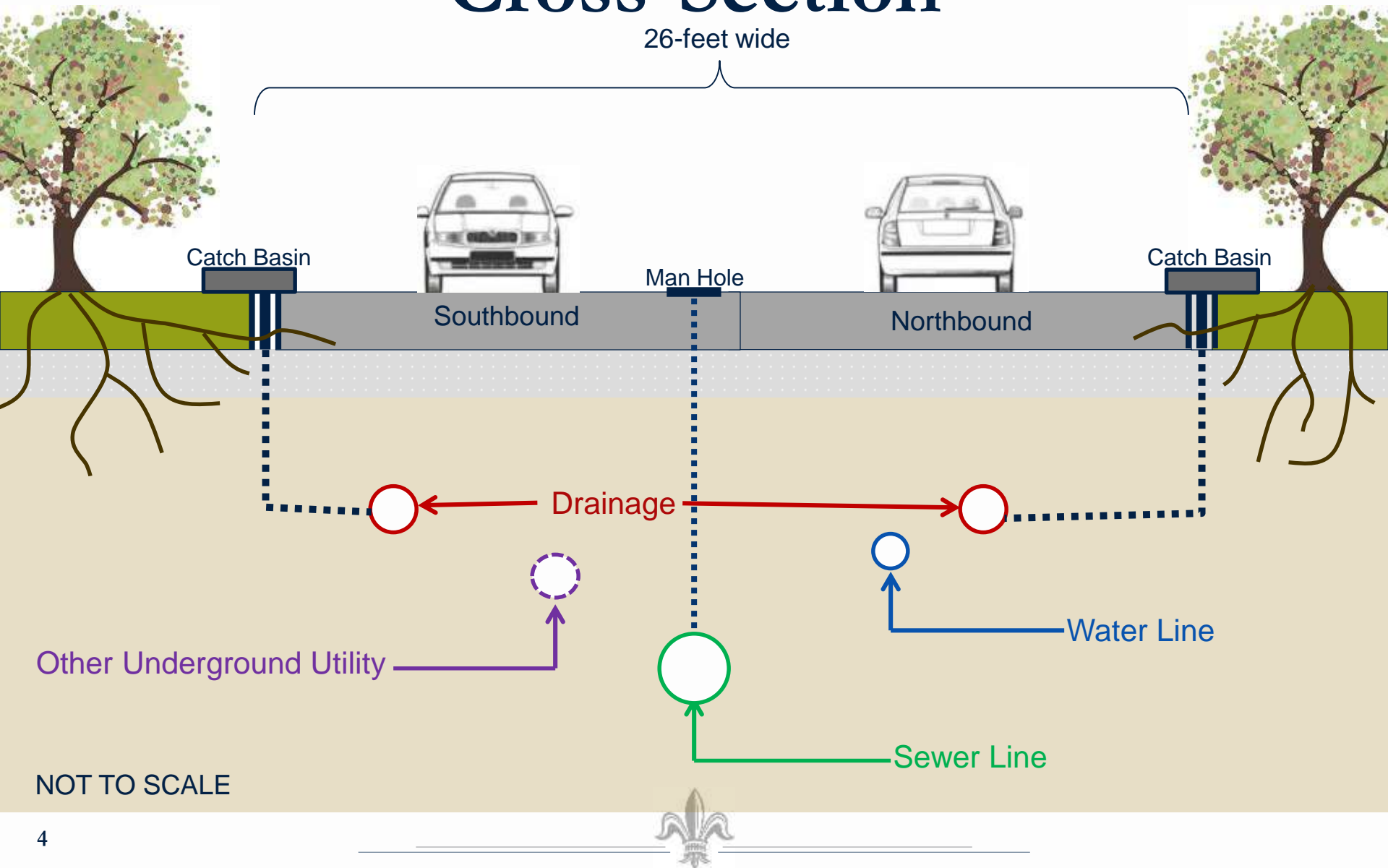
- Over 1,500 miles of City-owned roads
 - Approx. 70% of the City's roads are asphalt-topped and 30% are concrete-topped
 - A standard city block is 350 feet long
 - 1 mile = 15 blocks
 - Approx. 24,000 Blocks of streets in the City
 - Represents \$9.9B in fixed, physical City assets
- The standard design life of a roadway is:
 - 20 years for asphalt pavement
 - 30 years for concrete pavement
- Prior to Katrina, a typical year featured:
 - \$16M in roadway capital improvements using bond, FHWA, and CDBG funds; \$2-3M in roadway maintenance using general operating funds.



The Roadway System



Typical Street Right of Way Cross-Section

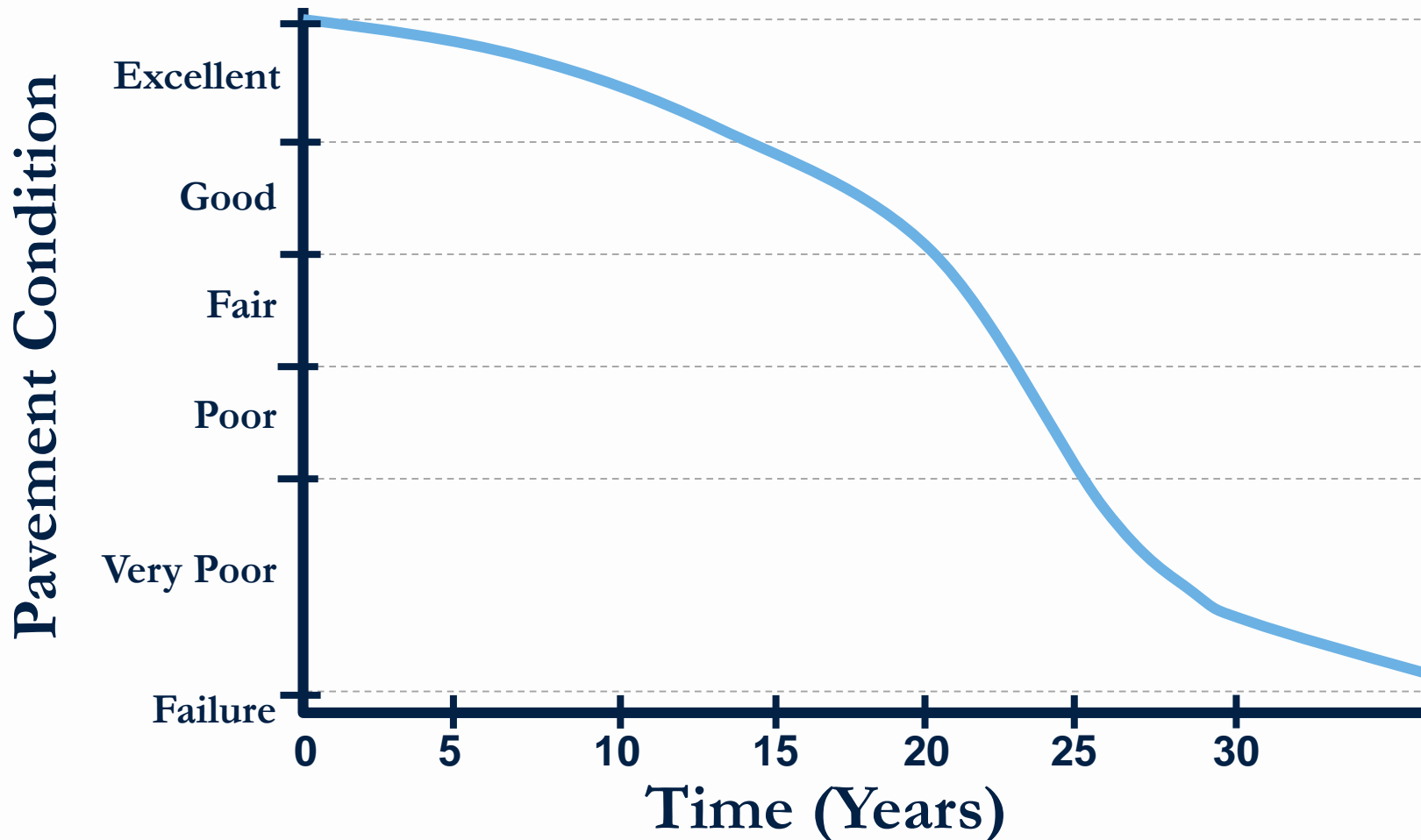


Pavement Condition Deterioration Over Time

- Over time, the pavement condition of every street deteriorates. Typically, this deterioration will begin slowly and as the condition of the street becomes worse, the rate of deterioration of the street will increase dramatically.
- This rate of deterioration can also be influenced and accelerated by:
 - Poor soil conditions and high ground water level;
 - Soil settlement and subsidence;
 - Amount, frequency and quality of maintenance performed;
 - Tree root growth in the road foundation;
 - Poor surface drainage;
 - Leaks from damaged/broken utility lines;
 - Significant increase in the type/volume of traffic, particularly heavy truck traffic; and/or
 - A traumatic event such as a prolonged flood event (i.e., Hurricane Katrina).



Modeling Pavement Condition Deterioration Over Time



A typical, well-maintained street would be expected to remain in Good condition for its entire design life (20+ years), remain in Fair condition for an additional 5-7 years, and then rapidly deteriorate from Fair to Poor to Very Poor condition in 3 years or less.

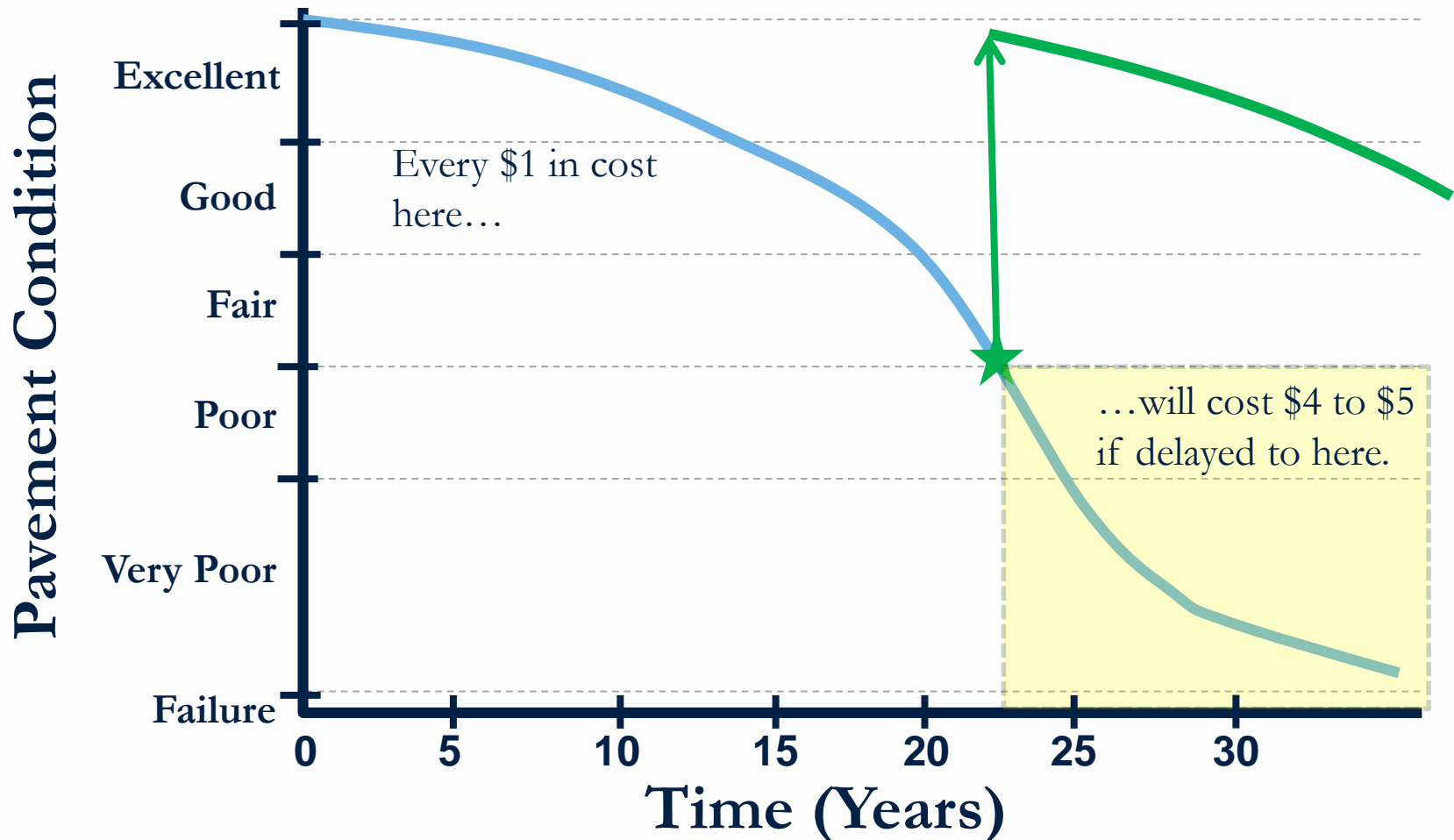


Pavement Management System

- A pavement management system strategically identifies and prioritizes road capital improvement projects so that the City can maintain its streets in a serviceable condition.
 - Data-driven;
 - Cost-effective;
 - Systematic approach to planning.
- Pavement management is a nationally recognized best practice recommended by the American Association of State Highway and Transportation Officials (AASHTO) and is used to:
 - Assess both current and predict future pavement conditions;
 - Estimate funding needs to achieve targeted pavement condition levels; and
 - Recommend the types and timing of pavement maintenance and capital investment in road work that optimize the use of available funding.



Optimal Pavement Management System



Ideally, a pavement asset management system program continuously restores the street's pavement condition to Excellent before it gets to be in Poor condition.



Pavement Condition Assessment Project

- The first step in implementing a pavement management system is to determine the current condition of the City's streets and establish acceptable targeted pavement condition levels.
- In late 2014, the City selected and contracted with a Consultant, Stantec Consulting Services, Inc, to perform a pavement condition assessment of all City-owned streets.
- Field data was collected in 2015 using a sophisticated suite of sensors mounted on a customized vehicle that drove on every street in the City.
- This data was analyzed in Spring 2016 and a report was delivered to the City in the Summer of 2016.
- Total cost = \$555,725



Roadway Assessment Classifications

Grade School Equivalent	Pavement Condition Rating	Pavement Condition Description	Recommended Scope of Work Needed	Estimated Avg Cost per Block
A	Excellent	Pavement is smooth with no cracking and in new condition. Ex. Baronne St. (Perdido-Gravier)	Minimal maintenance required.	\$50-\$150
B	Good	Pavement is smooth with a few small, widely space cracks. Ex. LaSalle St. (Perdido-Tulane Ave)	Minor maintenance to fill/seal cracks.	\$500-\$1,500
C	Fair	Pavement is relatively smooth with some cracking and potholes and is beginning to show traffic, but is still structurally sound. Ex. Girod St. (Loyola – S Peters)	Minor pavement rehabilitation. Patching of potholes and filling of cracks	\$5,000-\$50,000
D	Poor	Pavement has significant cracking and potholes with some rutting. The pavement structure is beginning to disintegrate and there is a risk of damage to underground utilities. The ride is rough, but the street is passable at lower speeds. Ex. Tulane Ave. (S Claiborne-Loyola)	Major pavement rehabilitation. Full-depth patching of some areas where the pavement has begun to disintegrate and repaving of the surface.	\$150,000-\$250,000
F	Very Poor/Failure	Pavement has significant cracking, potholes, and rutting. The pavement is disintegrating or has disintegrated and there is a high risk of damage to underground utilities. The ride is extremely rough and the street is only passable at very low speed and with difficulty. Ex. MLK Blvd. (St Charles Ave-OC Haley)	Full reconstruction of the roadway and all underground utilities.	\$400,000-\$600,000

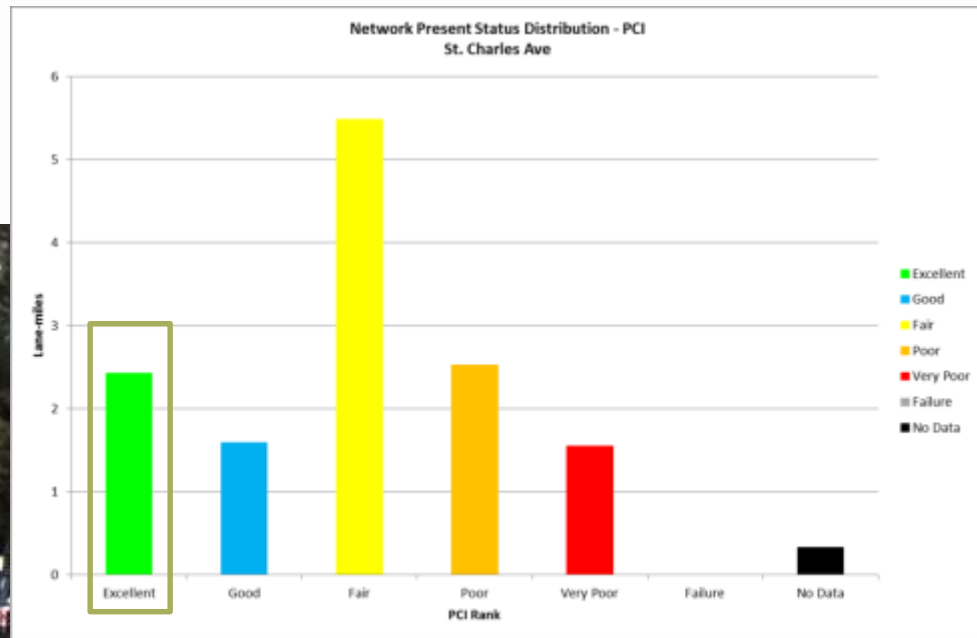


Pavement Assessment Process (Example Street)

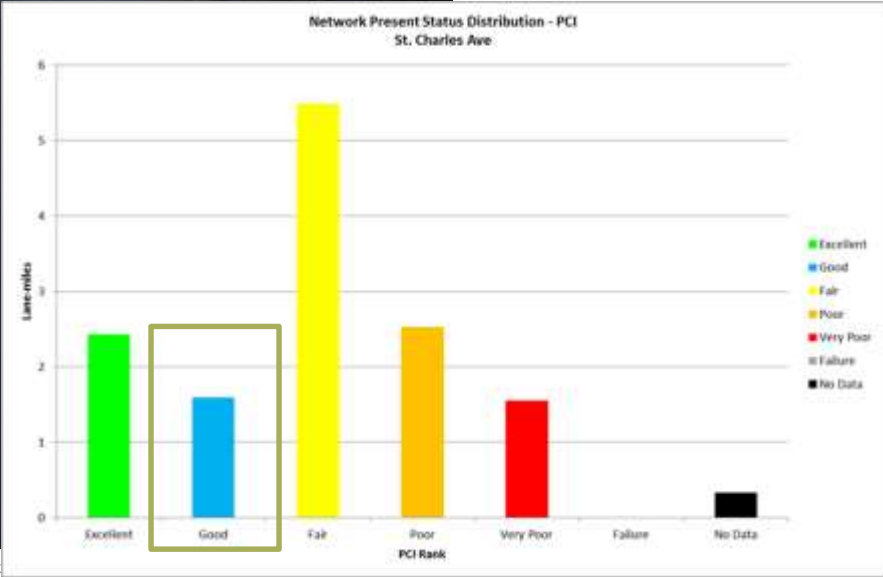
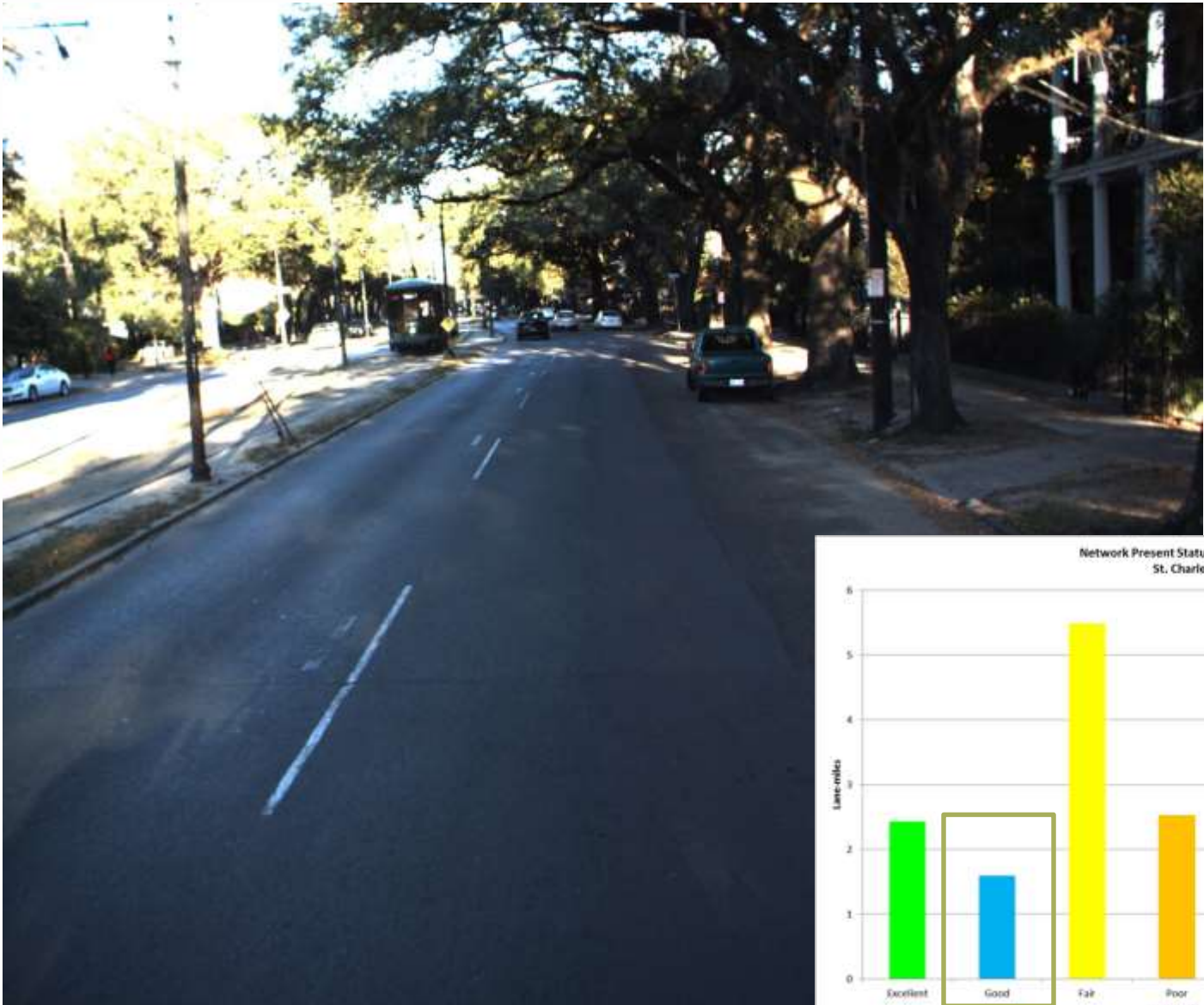
St. Charles Ave. (Leake – Calliope)



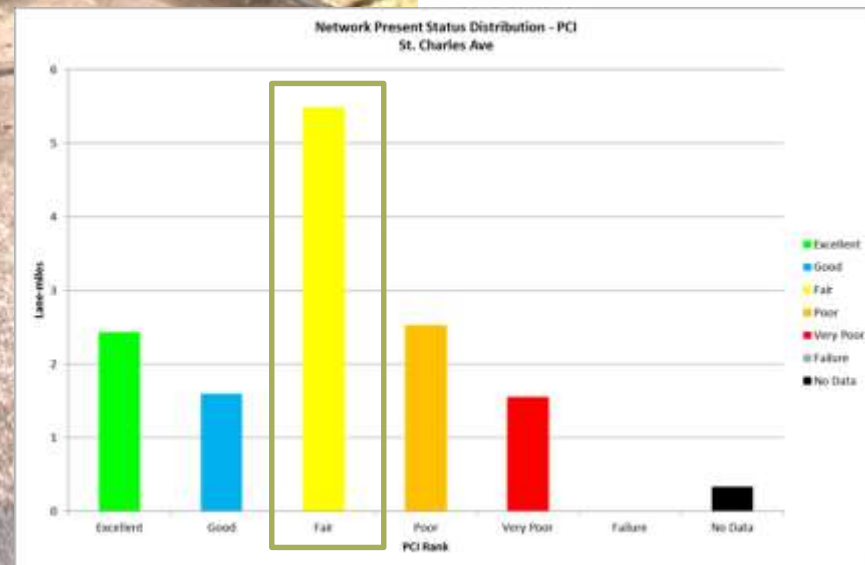
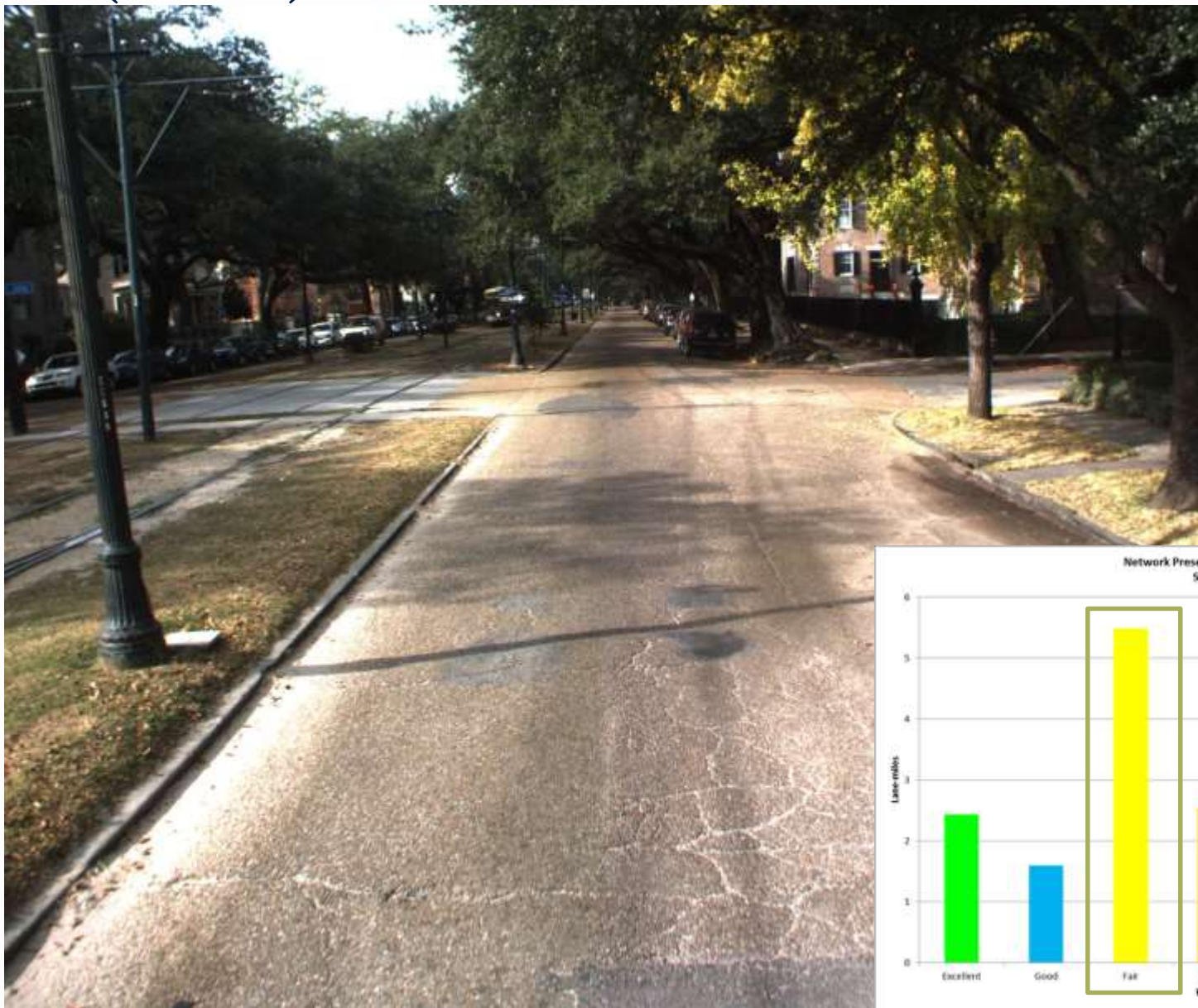
Upbound – Eleonore St. to State St. (51 feet)



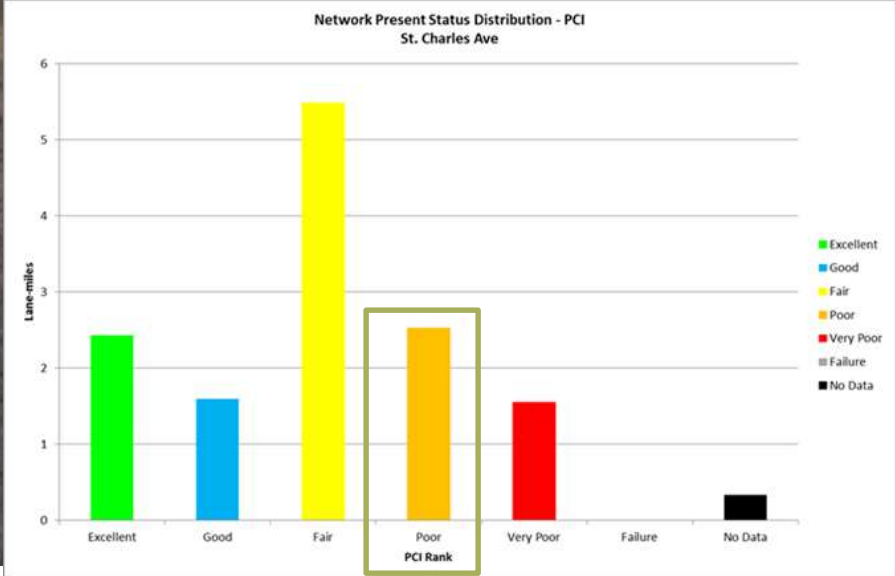
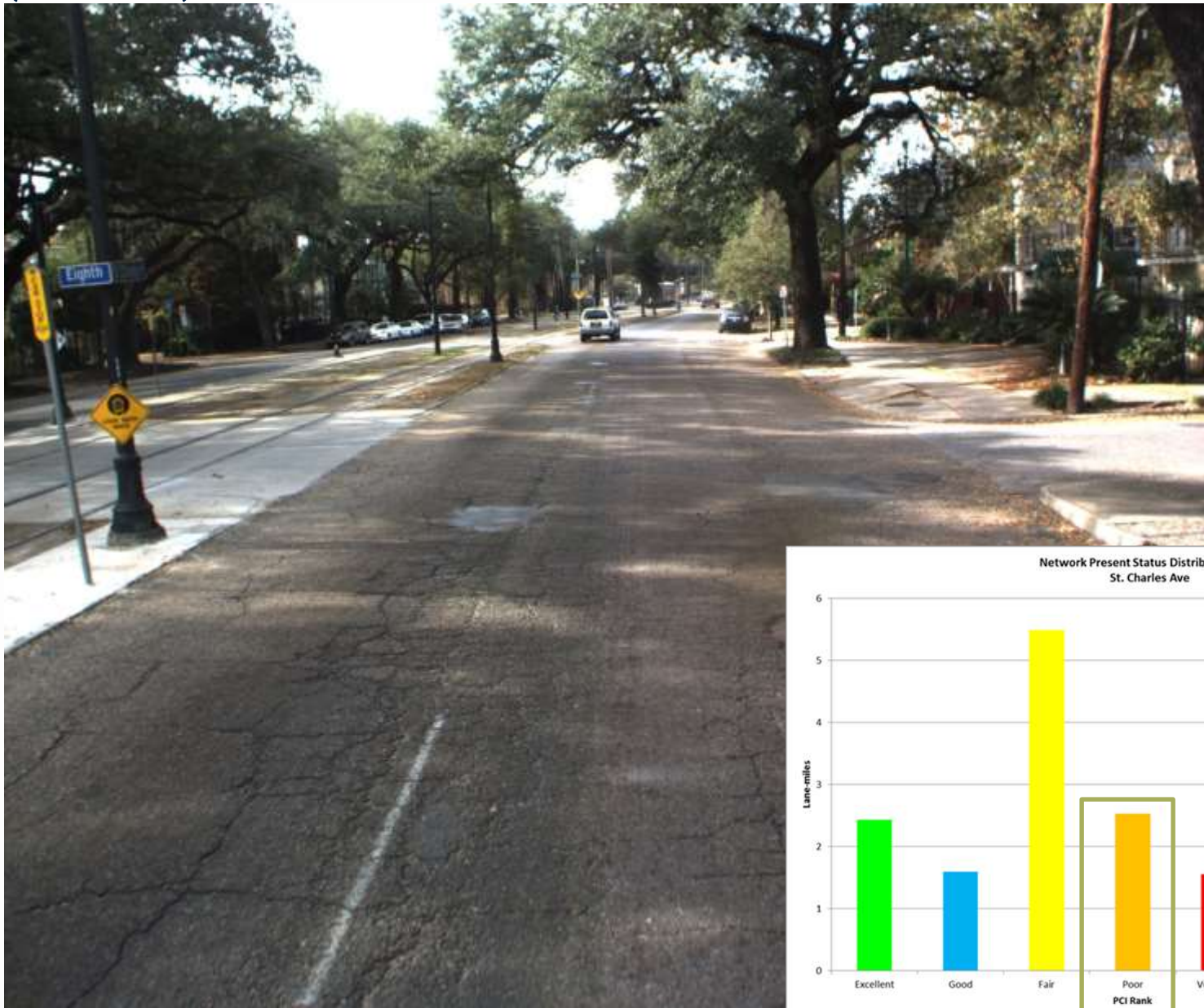
Downbound – Pleasant St to Harmony St. (120 feet)



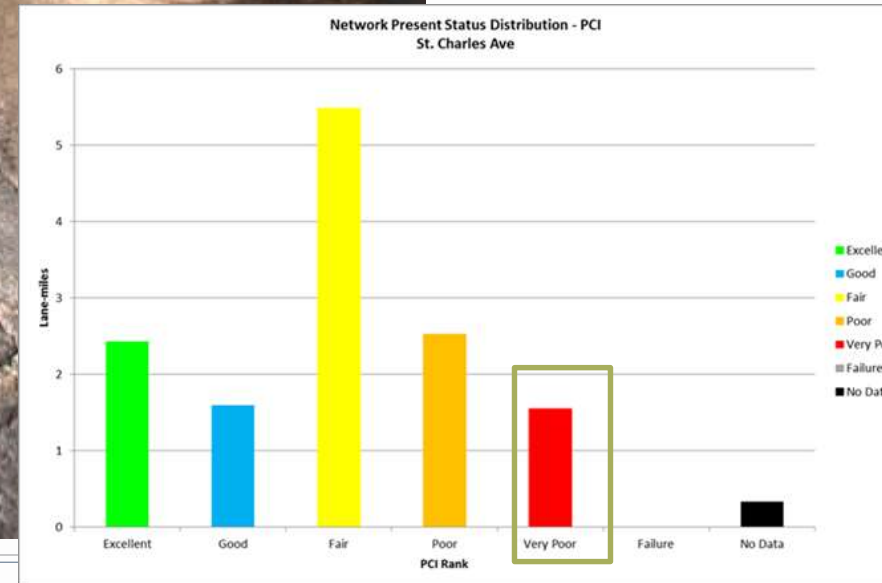
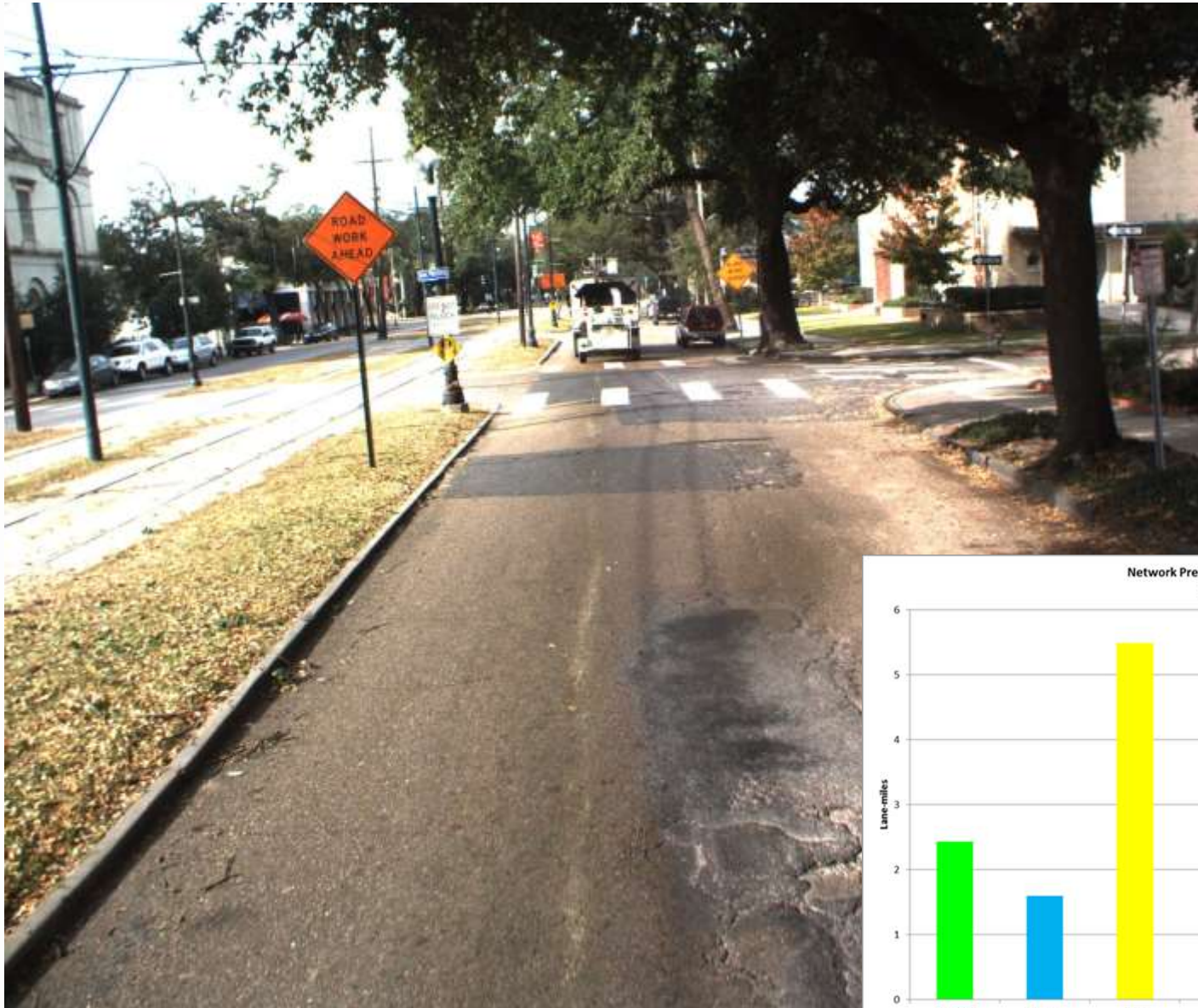
Upbound – Napoleon Ave to Jena St (247 feet)



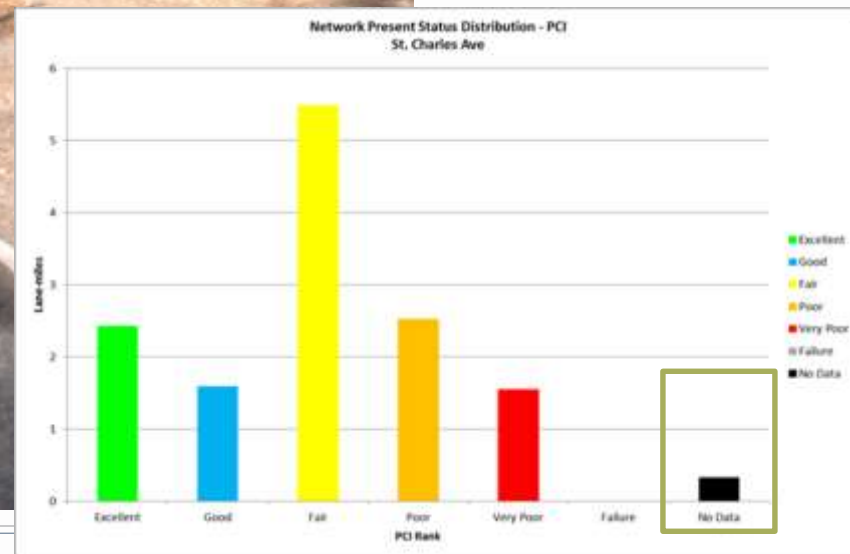
Upbound – Seventh St to Eighth St (231 feet)



Upbound – Milan St to General Pershing St (262 feet)

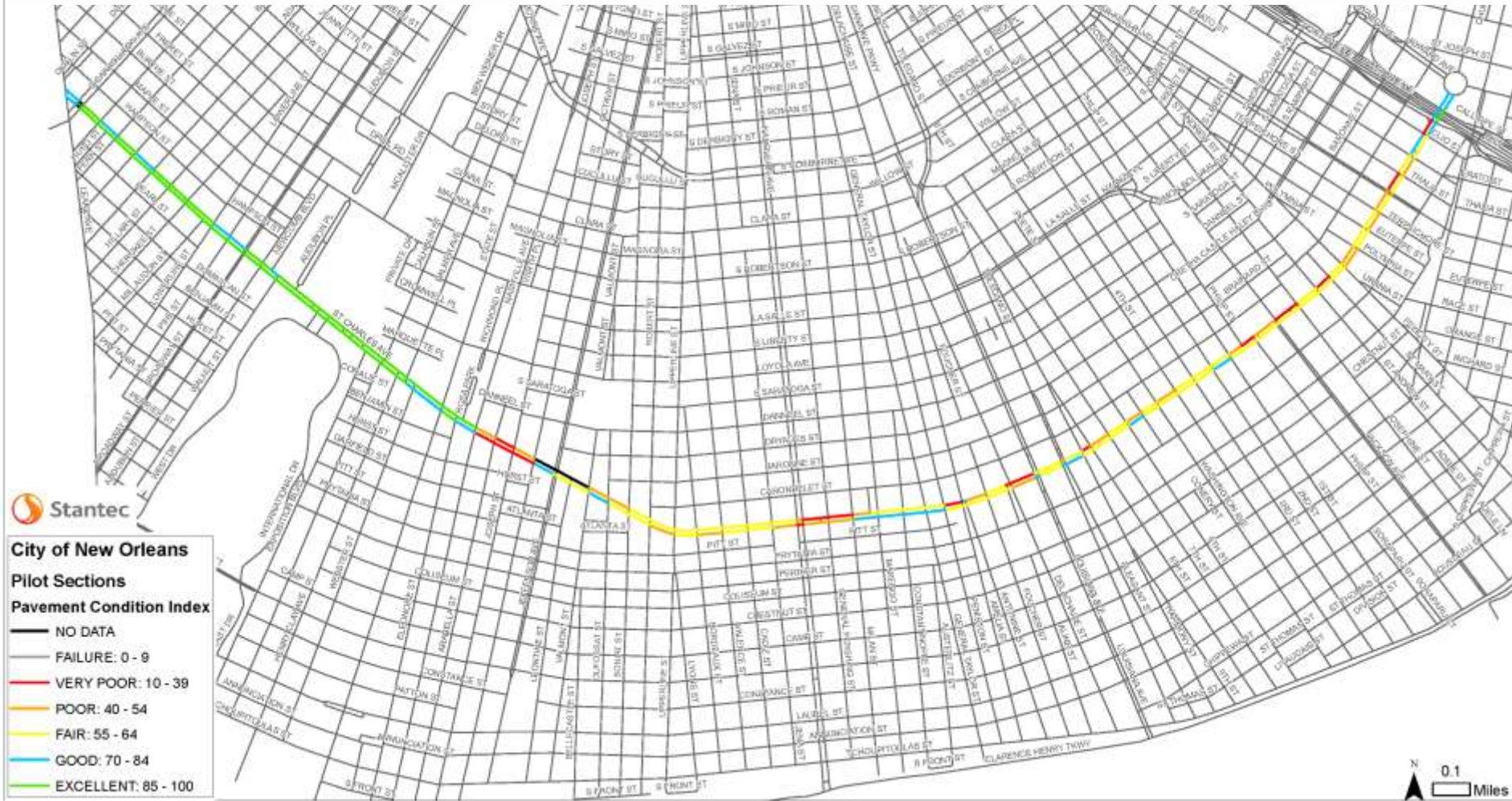


Upbound – Valmont St to Leontine St (142 feet)



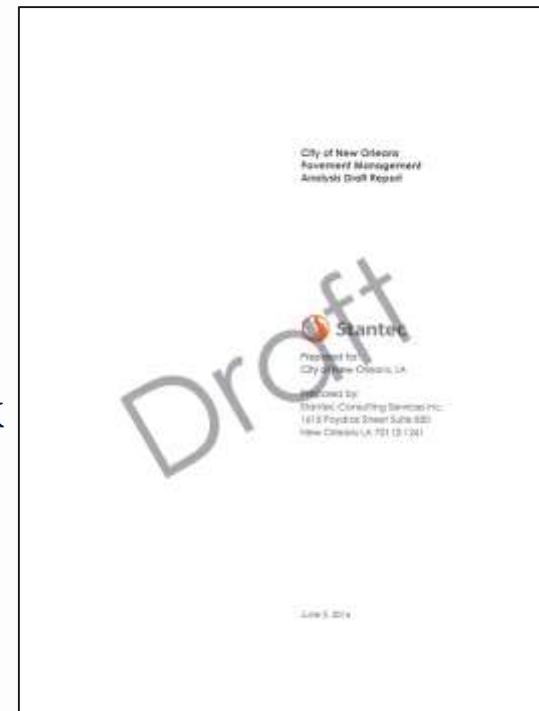
Pavement Assessment Results

St. Charles Ave. (Leake – Calliope)



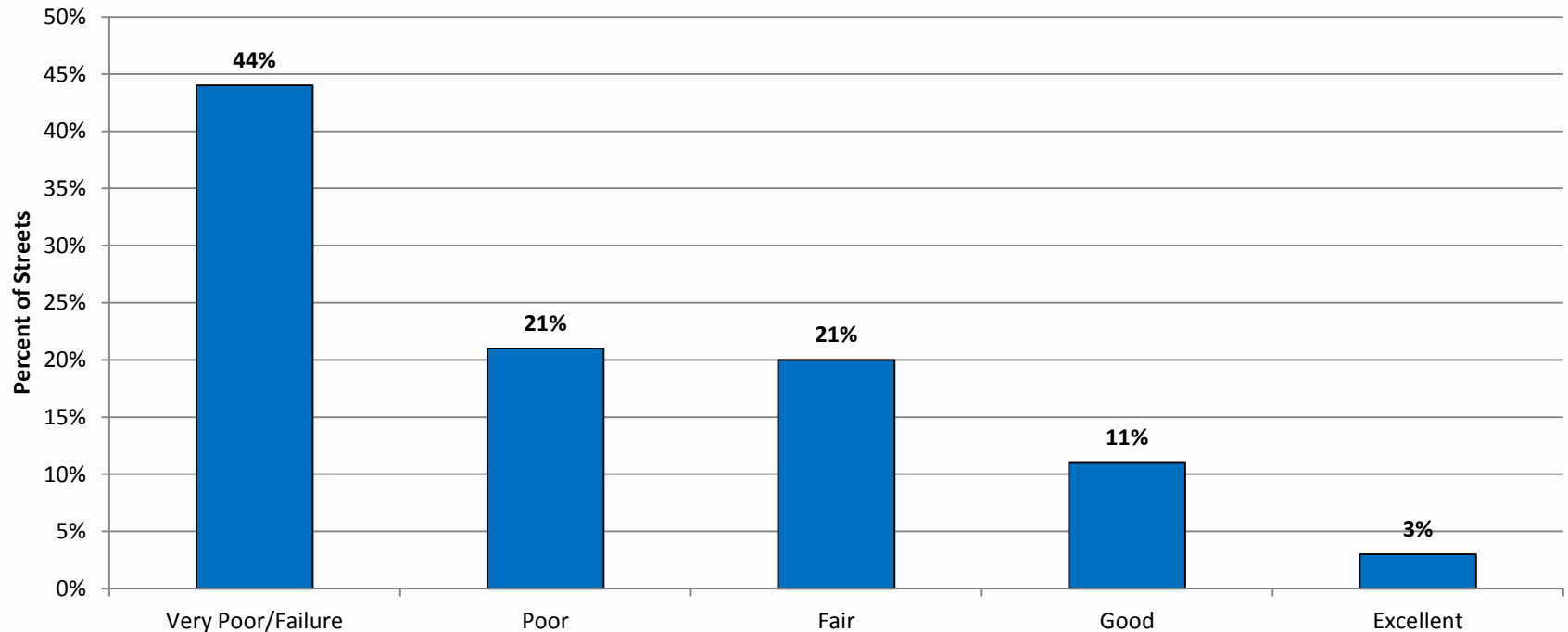
Pavement Analysis Report

- Explains what pavement condition data was collected in the field.
 - Roughness and rutting.
 - Pavement cracking.
 - Pavement surface distress (potholes, spalling, distortion, etc.).
- Explains how the data collected was analyzed to get a Pavement Condition Index (PCI) rating.
 - Riding Comfort Index (RCI) (i.e., ride quality)
 - Surface Distress Index (SDI) (i.e., how bad is the pavement surface distress?)
 - PCI is a combination of RCI and SDI.
- Pavement Condition rating for every City block
- Predictive modeling on future pavement conditions
- Only covers street pavement.



Pavement Analysis Report Results

Current Condition of City Streets



Based on the City-wide pavement condition assessment, the current average pavement condition rating for the City's streets is Poor (D-), with approximately 65% of the City's streets rated in Poor or worse condition.



[illegible]

■ Fair
■ Poor
■ Very Poor/Failure

Average Pavement Condition Rating By Neighborhood

Rank	Neighborhood	Lane Miles	Average Pavement Condition Rating	Grade
1	CITY PARK	49.3	Fair	C
2	B. W. COOPER	14.6	Fair	C
3	DESIRE DEV	11.7	Fair	C-
4	CENTRAL BUSINESS DISTRICT	57.6	Fair	C-
5	WEST LAKE FOREST	30.3	Fair	C-
6	LAKE TERRACE & OAKS	29.3	Poor	D+
7	FLORIDA DEV	1.7	Poor	D+
8	VIAVANT	65.9	Poor	D+
9	FAIRGROUNDS	30.8	Poor	D+
10	FISCHER DEV	9.0	Poor	D+
11	DESIRE AREA	50.0	Poor	D
12	MID-CITY	76.4	Poor	D
13	LITTLE WOODS	182.5	Poor	D
14	WEST RIVERSIDE	23.6	Poor	D
15	FRENCH QUARTER	16.4	Poor	D
16	GERT TOWN	45.4	Poor	D
17	IBERVILLE	2.5	Poor	D
18	TULANE - GRAVIER	31.1	Poor	D
19	ST. THOMAS DEV	9.3	Poor	D
20	BEHRMAN	55.4	Poor	D
21	OLD AURORA	99.1	Poor	D
22	LAKE CATHERINE	13.3	Poor	D
23	READ BLVD EAST	67.6	Poor	D
24	ST. BERNARD AREA	17.3	Poor	D

Ranked in
order from
high to low

Average Pavement Condition Rating By Neighborhood (Cont.)

Rank	Neighborhood	Lane Miles	Average Pavement Condition Rating	Grade
25	TREME - LAFITTE	30.6	Poor	D
26	SEVENTH WARD	46.0	Poor	D
27	VILLAGE DE LEST	47.5	Poor	D
28	NAVARRE	23.4	Poor	D
29	TALL TIMBERS - BRECHTEL	60.1	Poor	D
30	LAKEWOOD	19.8	Poor	D
31	LOWER GARDEN DISTRICT	38.2	Poor	D
32	HOLY CROSS	28.5	Poor	D
33	U.S. NAVAL BASE	21.2	Poor	D
34	FILMORE	54.5	Poor	D
35	PINES VILLAGE	38.5	Poor	D
36	WHITNEY	23.1	Poor	D
37	NEW AURORA - ENGLISH TURN	42.8	Poor	D
38	IRISH CHANNEL	14.5	Poor	D
39	BROADMOOR	33.8	Poor	D-
40	DILLARD	38.3	Poor	D-
41	MARLYVILLE - FONTAINBLEAU	33.6	Poor	D-
42	ST. ANTHONY	30.4	Poor	D-
43	LAKEVIEW	82.4	Poor	D-
44	MARIGNY	12.2	Poor	D-
45	BAYOU ST. JOHN	20.9	Very Poor/Failure	F
46	READ BLVD WEST	32.6	Very Poor/Failure	F
47	PONTCHARTRAIN PARK	25.7	Very Poor/Failure	F
48	MILNEBURG	43.4	Very Poor/Failure	F

Ranked in
order from
high to low

Average Pavement Condition Rating By Neighborhood (Cont.)

Rank	Neighborhood	Lane Miles	Average Pavement Condition Rating	Grade
49	McDONOGH	19.3	Very Poor/Failure	F
50	CENTRAL CITY	79.5	Very Poor/Failure	F
51	LAKESHORE - LAKE VISTA	35.7	Very Poor/Failure	F
52	GENTILLY WOODS	29.9	Very Poor/Failure	F
53	ST. ROCH	58.4	Very Poor/Failure	F
54	BYWATER	26.7	Very Poor/Failure	F
55	GENTILLY TERRACE	58.9	Very Poor/Failure	F
56	ST. CLAUDE	46.4	Very Poor/Failure	F
57	DIXON	10.7	Very Poor/Failure	F
58	AUDUBON	69.5	Very Poor/Failure	F
59	LOWER NINTH WARD	78.5	Very Poor/Failure	F
60	TOURO	16.9	Very Poor/Failure	F
61	FRERET	9.8	Very Poor/Failure	F
62	ALGIERS POINT	11.5	Very Poor/Failure	F
63	MILAN	24.9	Very Poor/Failure	F
64	WEST END	29.5	Very Poor/Failure	F
65	BLACK PEARL	10.3	Very Poor/Failure	F
66	LEONIDAS	37.9	Very Poor/Failure	F
67	HOLLYGROVE	34.1	Very Poor/Failure	F
68	FLORIDA AREA	16.8	Very Poor/Failure	F
69	EAST RIVERSIDE	10.0	Very Poor/Failure	F
70	EAST CARROLLTON	17.1	Very Poor/Failure	F
71	UPTOWN	35.0	Very Poor/Failure	F
72	GARDEN DISTRICT	10.8	Very Poor/Failure	F
73	PLUM ORCHARD	38.3	Very Poor/Failure	F

Ranked in
order from
high to low

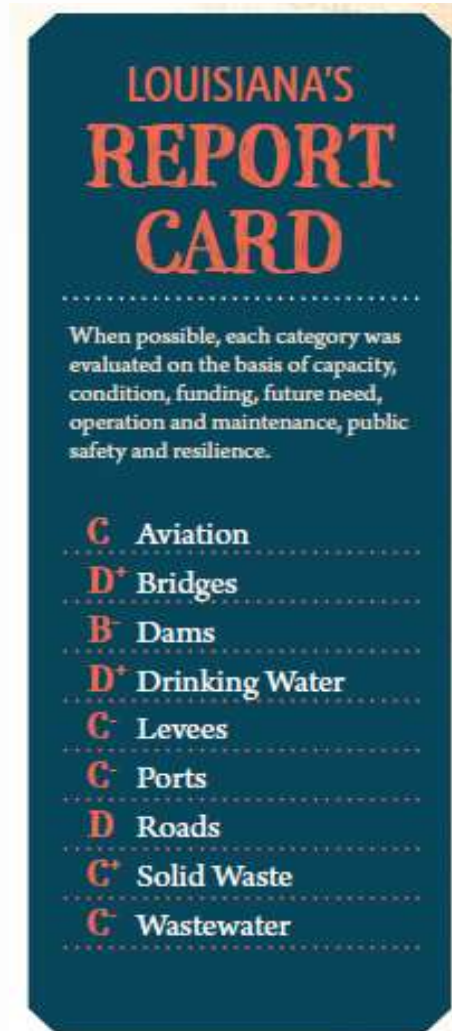
Conclusions from the Pavement Assessment Analysis Report

- Historical levels of funding for streets is inadequate to prevent the overall condition of the City's streets from getting worse.
- It would take approximately \$5B in funding to reconstruct/repave all of the City's streets that are currently in Poor or worse condition.
- Additional funding will be required as streets and the infrastructure underneath them ages and deteriorates from usage
- A 20-30 year sustained effort, a disciplined, strategic approach and an annual capital investment of \$200-350M is required to raise the average pavement condition rating of the City's streets to Fair (C).
- \$30-35M annually is needed to fully fund routine maintenance on our streets. (Cost does not include maintenance costs for drainage, water distribution, and sewerage collection systems.)



Some Perspective

- It took over 40 years' worth of underfunding and damage sustained as a result of Hurricane Katrina and its immediate aftermath to reach this point.
- Poor infrastructure is a Nation-wide problem.
- The infrastructure report card published by the American Society of Civil Engineers (ASCE) in 2012, rated the nations' roads “**D**”, Louisiana's roads also earned a “**D**” rating.



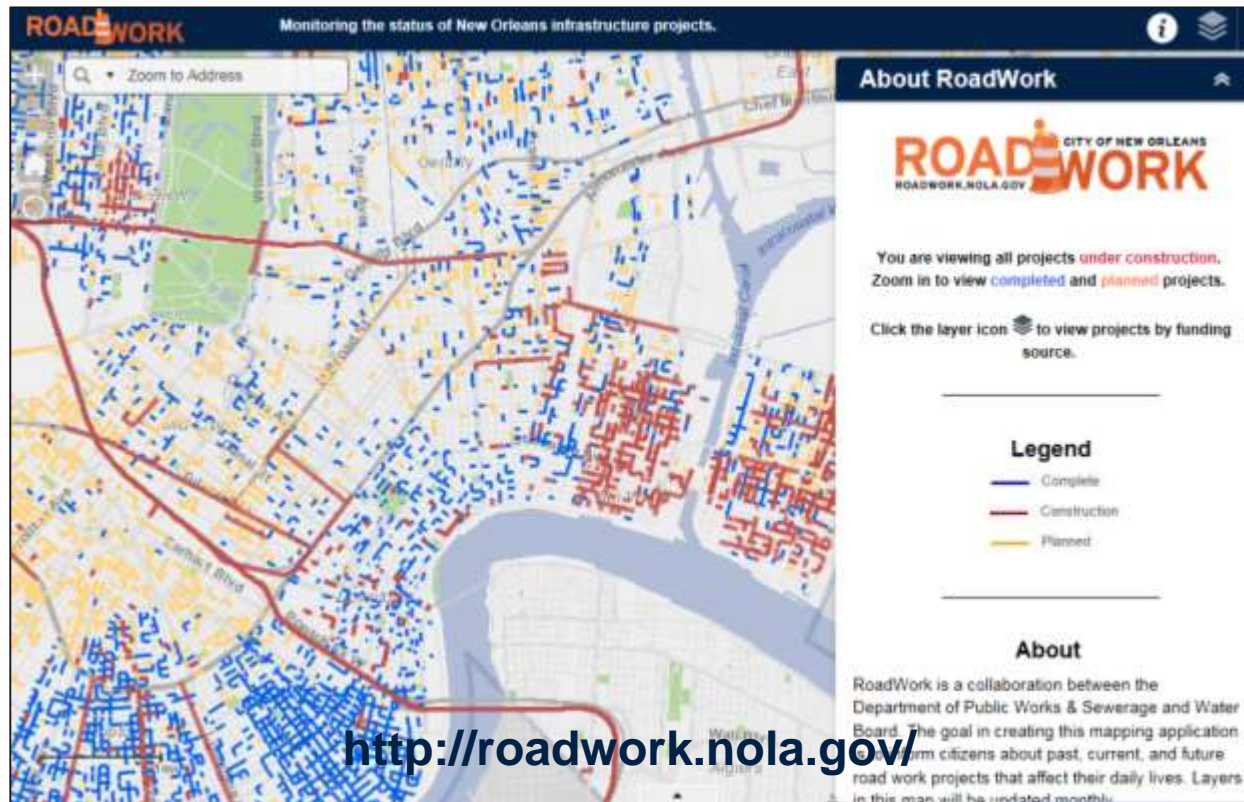
Path Forward

- Pavement condition ratings will be used in combination with existing eligible Katrina related damage to plan currently funded roadway capital improvements.
- Pavement management principles will be used when planning to scope of work to be performed.
- The pavement condition rating database will be updated by DPW staff to reflect work completed and measure the impact of the work performed.
- The pavement condition rating database will be used to plan and prioritize future roadway maintenance and capital improvements.



Resources

- The results from the pavement condition assessment will be added as a layer to the RoadWork webpage within the next 30 days.
- A copy of the Pavement Analysis Report will also be posted on the DPW webpage at <http://www.nola.gov/dpw/> within the next 30 days.



Discussion



Background Slides



Capital Improvement Program– Non-Paving Incidentals

Scope of work may include:

- Repairing damaged curbs and gutters
- Leveling sidewalks to meet the requirements of the American with Disabilities Act
- Installing compliant driveway aprons
- Installing American with Disabilities Act-compliant curb ramps at intersections.



Capital Improvement Program– Incidental Road Repairs

Scope of work may include:

- Asphalt patching
- Repairing damaged curbs, sidewalks and driveway aprons
- Installing American with Disabilities Act-compliant curb ramps at intersections.
- May include utility point repairs and/or lining of sewer lines.



Capital Improvement Program– Patch, Mill and Overlay

Scope of work may include:

- Repaving the asphalt roadway from curb-to-curb
- Repairing damaged sidewalks and driveway aprons
- Installing American with Disabilities Act-compliant curb ramps at intersections



(Similar in scope to Paths to Progress Program)



Capital Improvement Program– Patch Concrete

Scope of work may include:

- Damaged portions of concrete to be replaced with new, level concrete
- Repairs to damaged curbs, sidewalks and driveway aprons
- Installing American with Disabilities Act-compliant curb ramps at intersections



(Similar in scope to Lennox Dr.)



Capital Improvement Program – Full Depth Reconstruction



Scope of work may include:

- Replacement of the underground sewer, water, and drain lines
- New pavement and sidewalks

(Similar in scope to bond-funded road project)



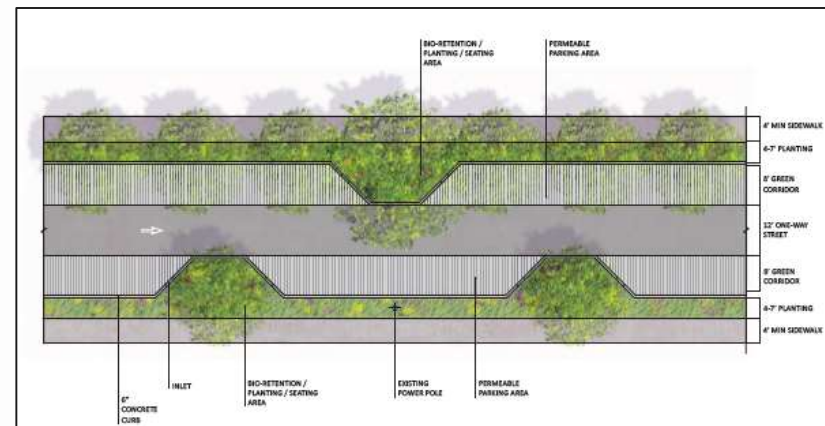
Capital Improvement Program– Green Infrastructure

Green Infrastructure features may be incorporated into CIP projects. Scope of work may include:

- Retrofitting and/or constructing the street with green infrastructure features such as underground storage, permeable/previous pavement, bioswales and/or rain gardens that combined with the existing drainage system reduces the risk of flooding in higher risk areas.



Make It Right Project – Lower Ninth Ward



Capital Improvement Program– Bridge Replacement/Rehabilitation

Scope of bridge projects vary but may include:

- Removing and replacing vehicular and pedestrian bridge structures
- Painting and rehabilitating
- Installing lighting fixtures or electrical conduits
- Upgrading structures to meet American with Disabilities Act-compliance standards

